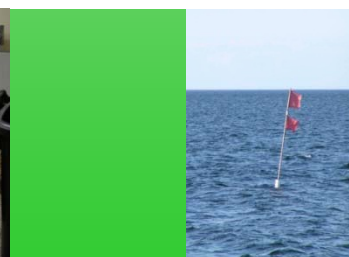


Cod traps as an ecological sound fishing gear in German waters

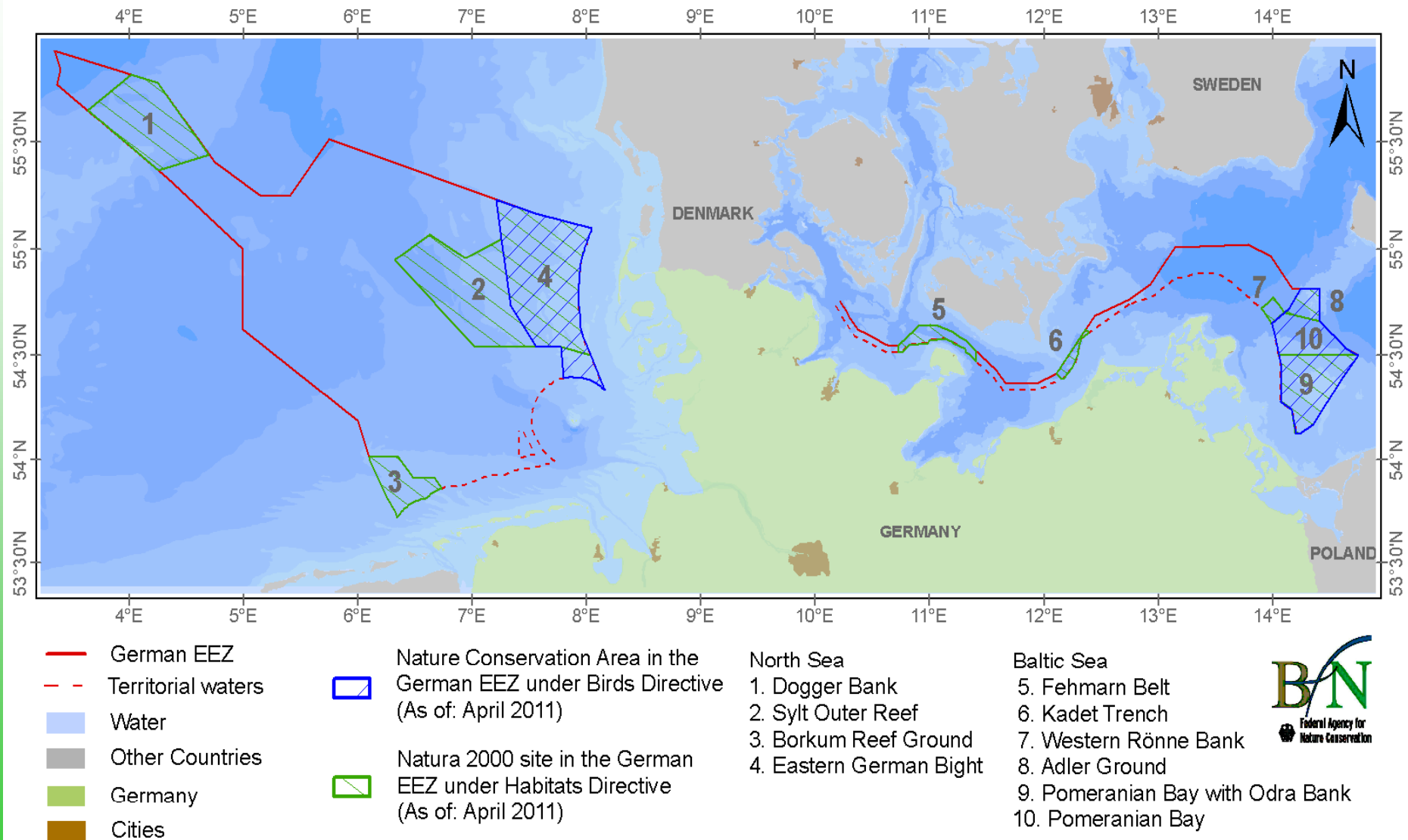


Christian Pusch

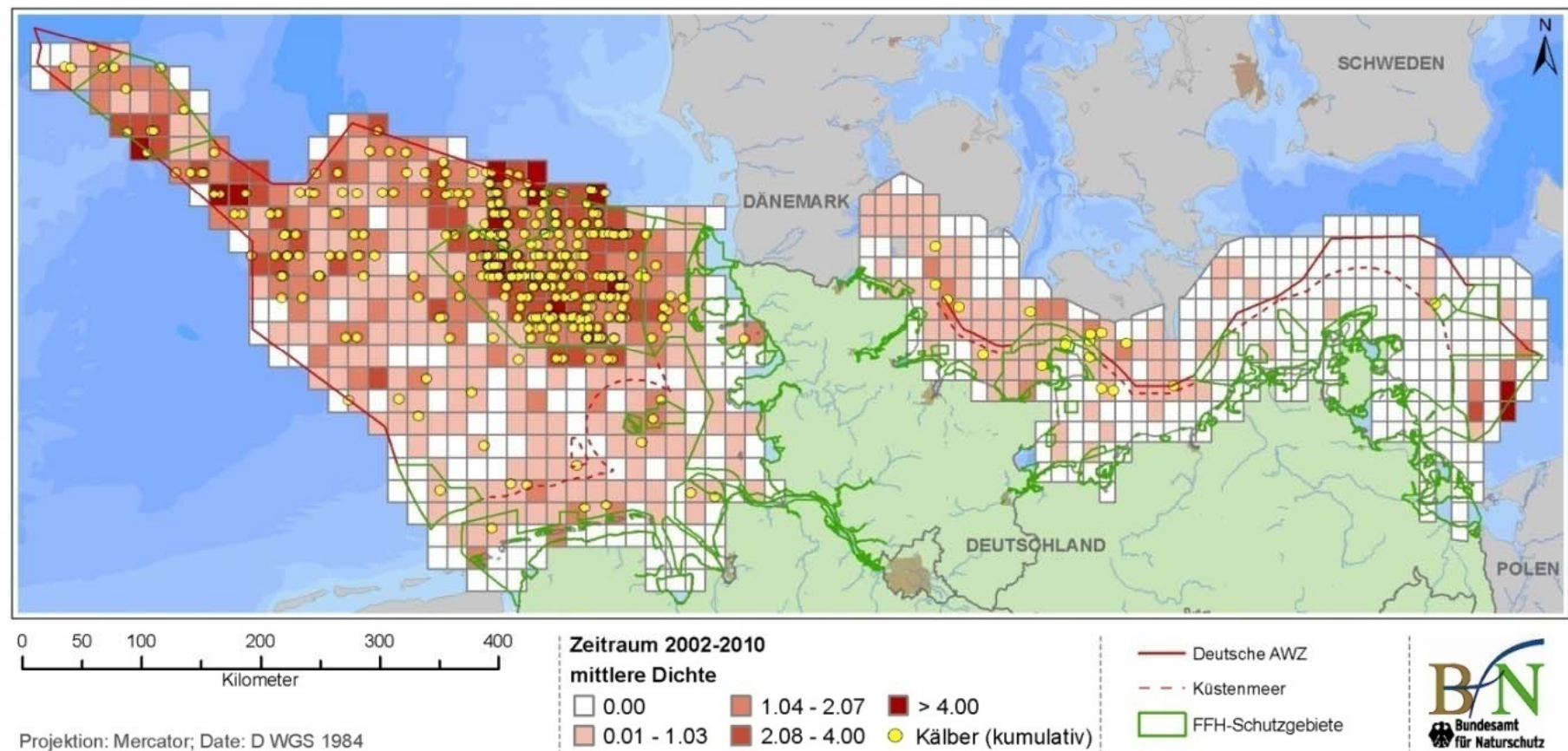
19.10.2011, Woods Hole, MA, USA



Natura 2000 network of Marine Protected Areas in the German EEZ of the North Sea and Baltic Sea



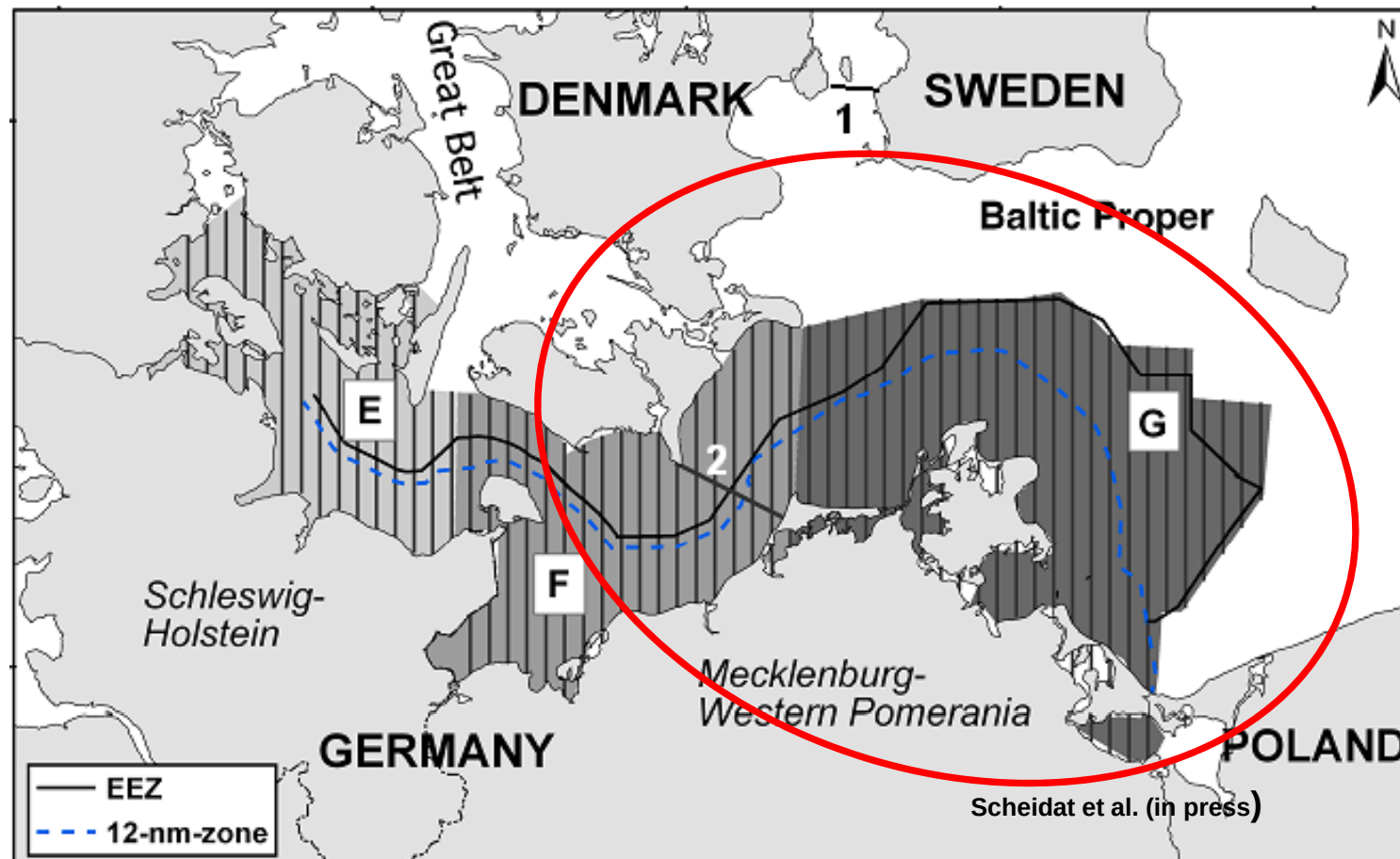
Harbour Porpoise (*Phocoena phocoena*)



Average Density of harbour porpoise in the North Sea and Baltic Sea

Special concern:
much reduced **Baltic Proper**
population

➔ **Less than 600 individuals**



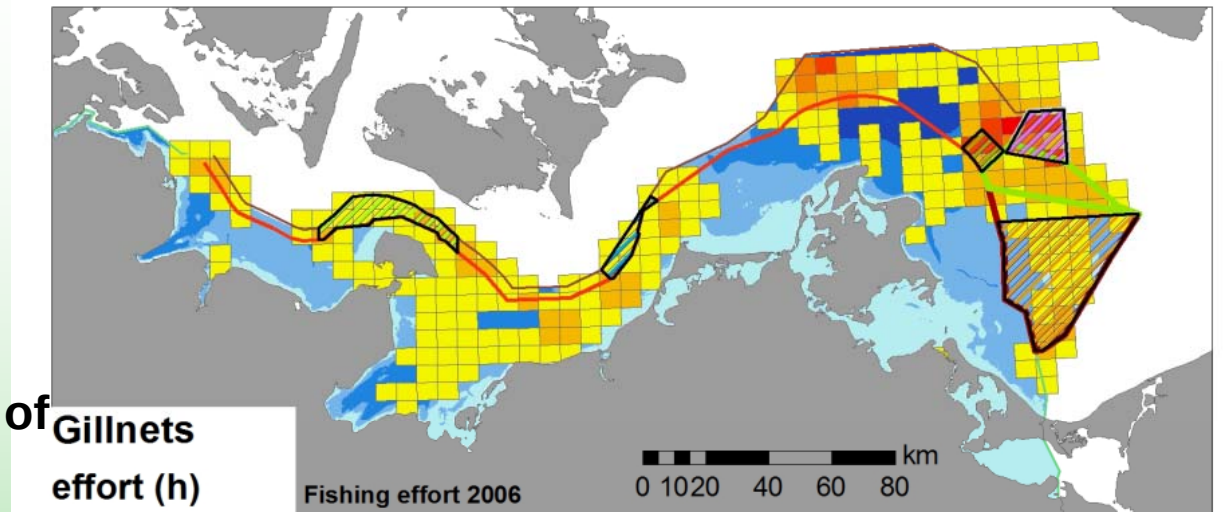
Gillnet fisheries

-Main target species cod, herring, garfish, flounder, and other species

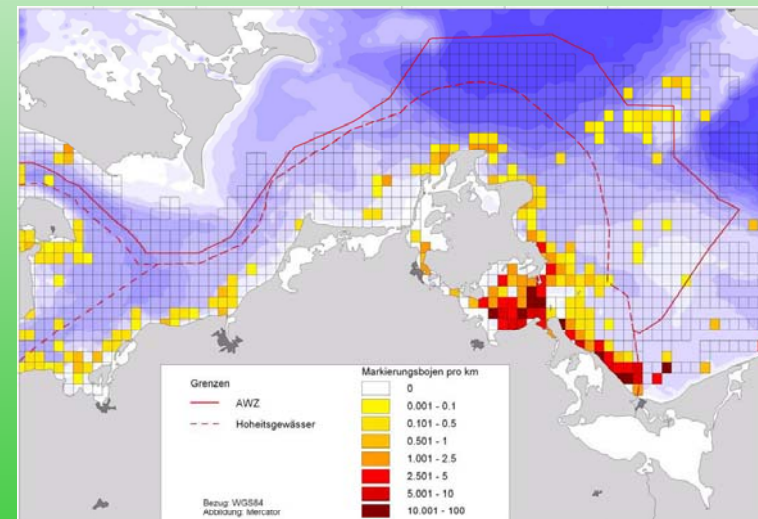
-76 % of the German vessels is below 8 m (use of VMS and logbook is not mandatory)

-Less than 1 % > 12 m

-Poor data availability



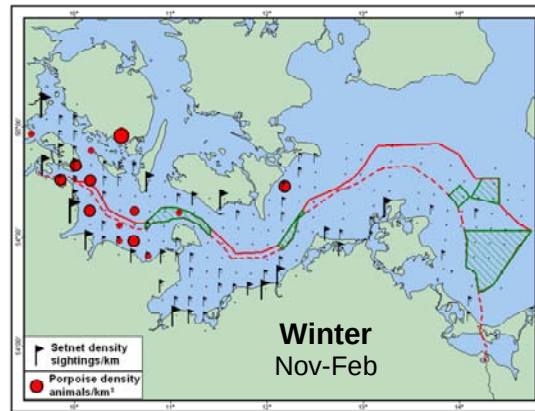
Based on VMS



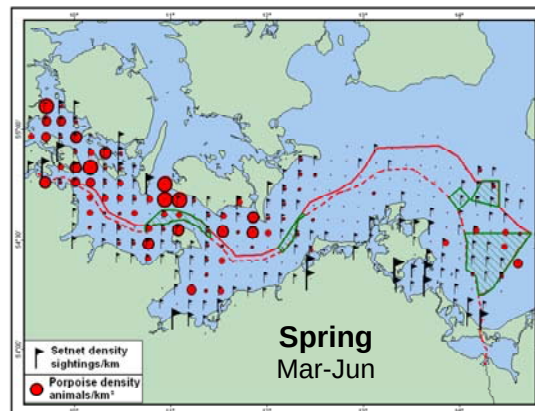
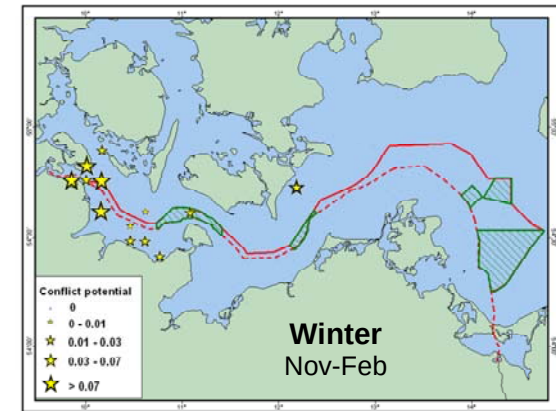
Based on aerial surveys of set net flags

Length	Vessel with static gear Mecklenburg-Vorpommern	
	N	%
< 4 m	413	33,6
4 bis < 8 m	531	43,2
8 bis < 12 m		
m	274	22,3
12 bis < 15	11	0,9
Sum	1229	

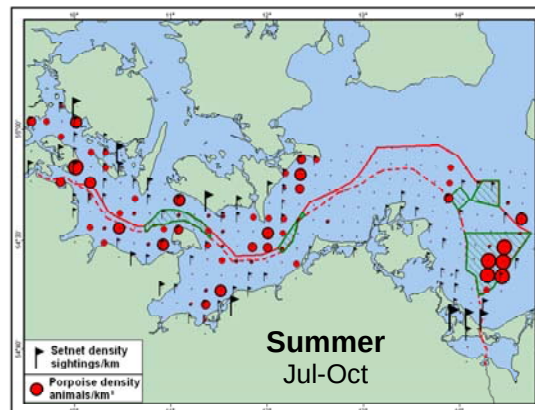
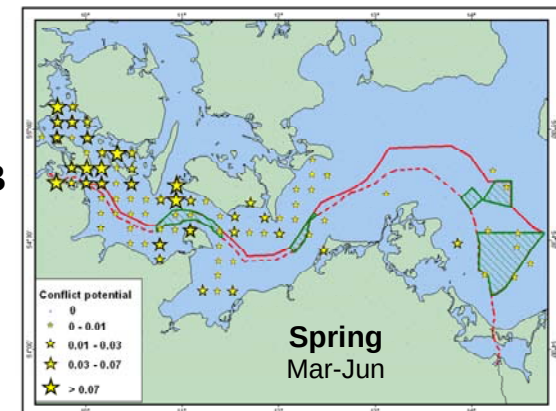
Conflict analysis between the distribution of harbour porpoise and gillnet fisheries (ICES 2008)



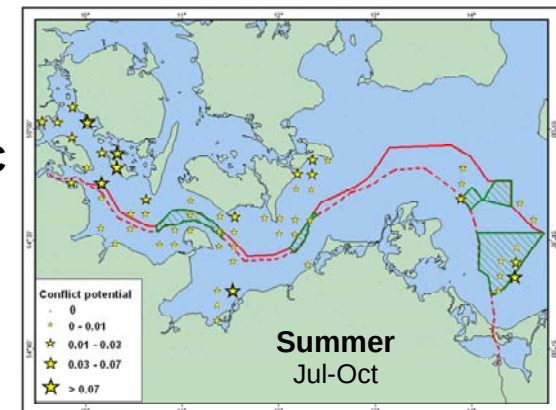
A

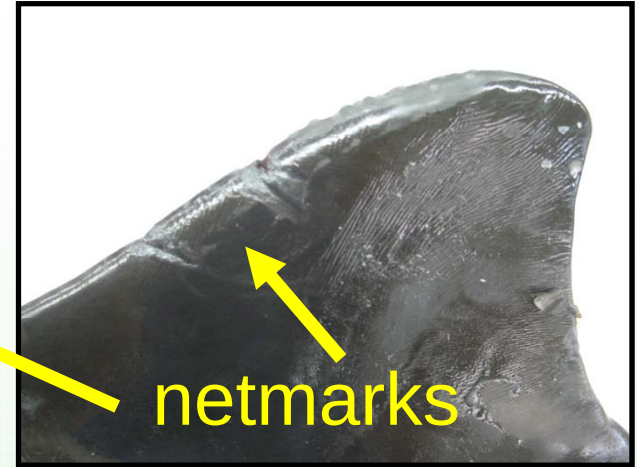
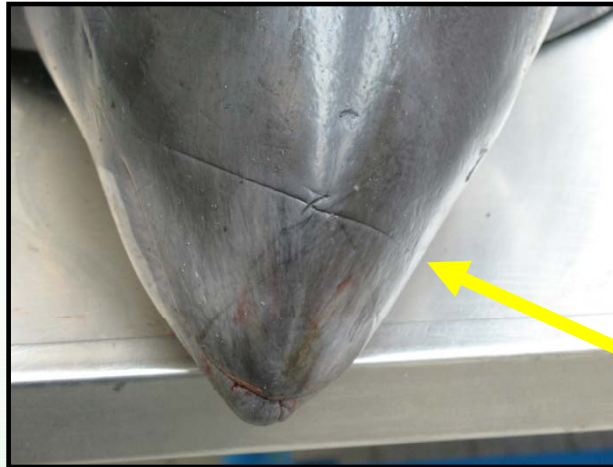


B



C

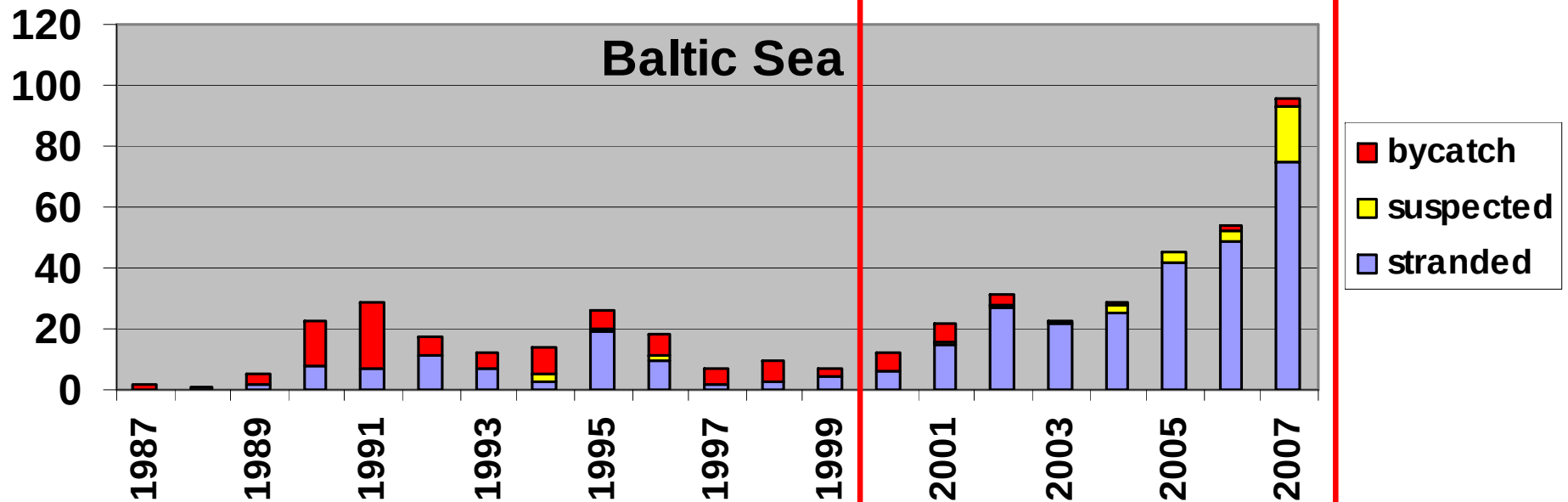
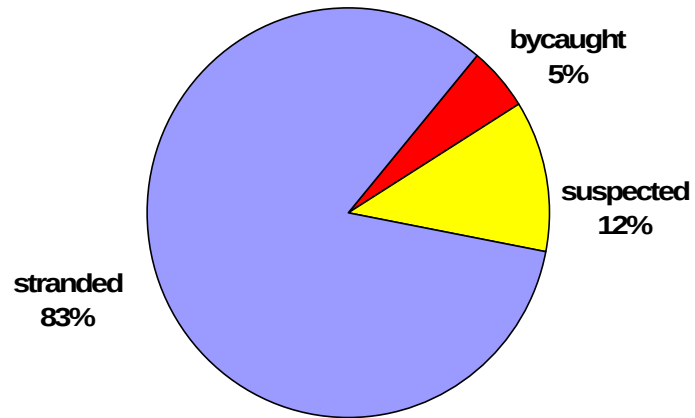


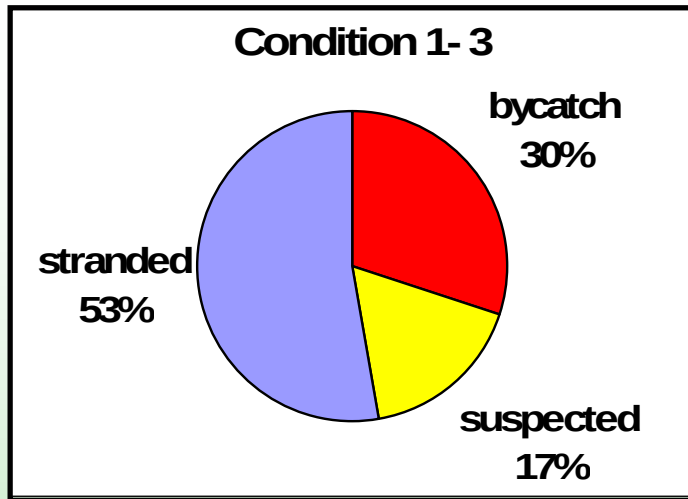


⊕ necropsy findings ⇒ "suspected bycatch"

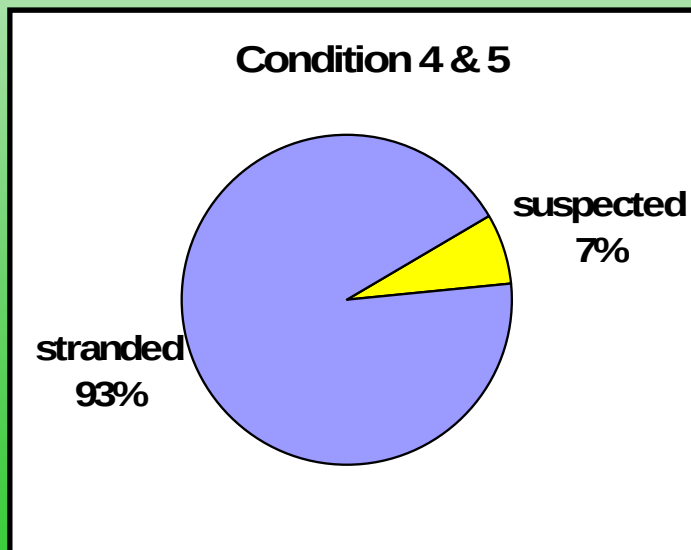
⊕ all remaining carcasses ⇒ "stranded"

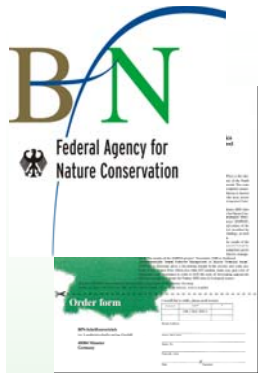
Stranded/bycaught porpoises
2000-2007





47% (suspected) bycatch





EMPAS-Project ¹



ICES advice ²



Main conflicts between fishing activities and habitats and species in Natura 2000 sites:

1. Impacts of bottom contacting fishing gears on Habitat Directive features in Natura 2000 sites in the North Sea;
2. Bycatch of seabirds in static gears, especially bottom set gillnets, in sites of the Baltic Sea;
3. Bycatch of harbour porpoise in static gears, mainly bottom set gillnets, in Natura 2000 sites of the North- and Baltic Sea.

Potential Management Options for harbour porpoise in the Central Baltic (ICES Advice 2008)

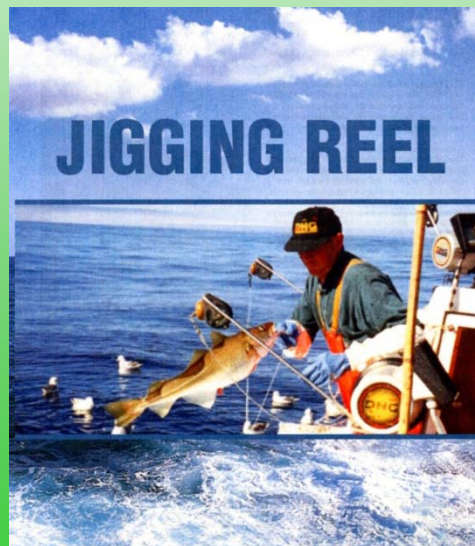
- 1) Closing of set net fisheries in all sites
- 2) Mandatory use of acoustic deterrent devices on all set nets and all vessel sizes (combined with an effective observer scheme)
- 3) Gear modifications (e.g. barium sulphate nets, fish traps, etc.)

Alternative gears:

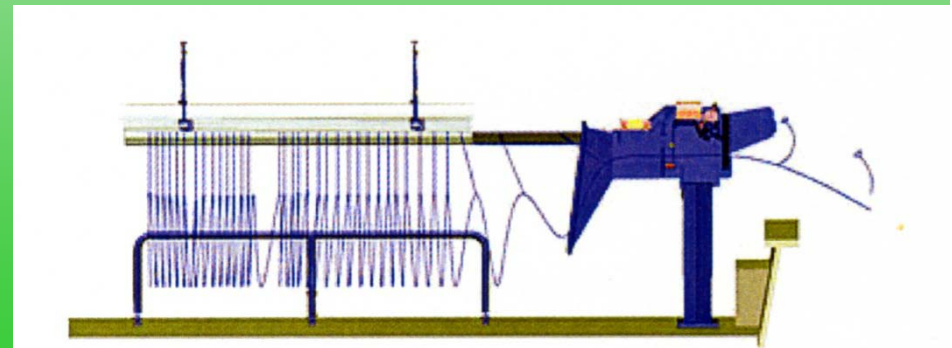
- Fish traps (cod pots)



- Jigging



- Longlines



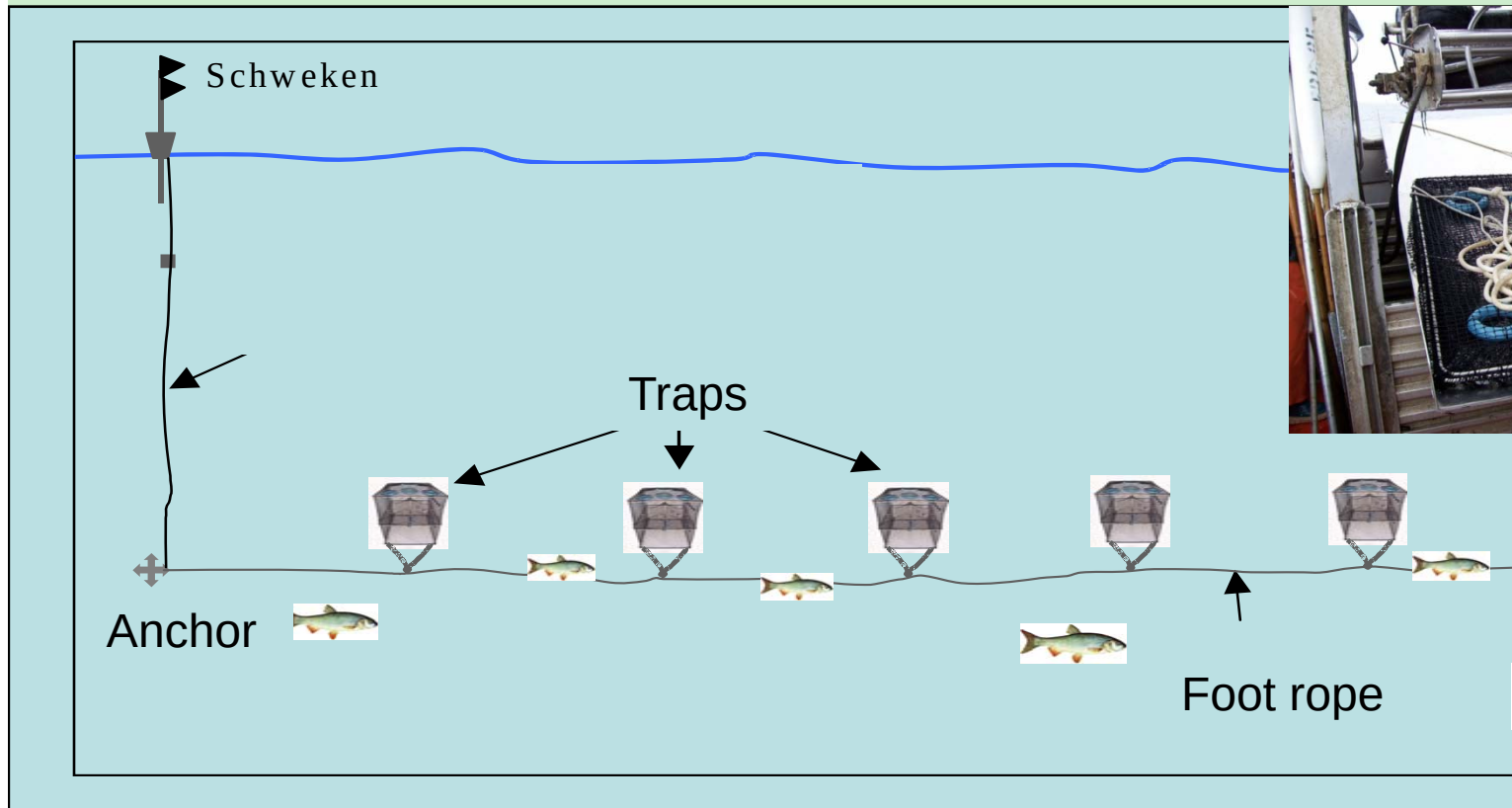
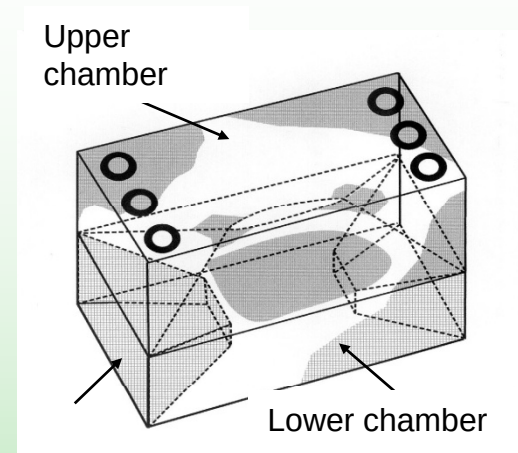
Pilot study with cod traps 2007-09

Main tasks:

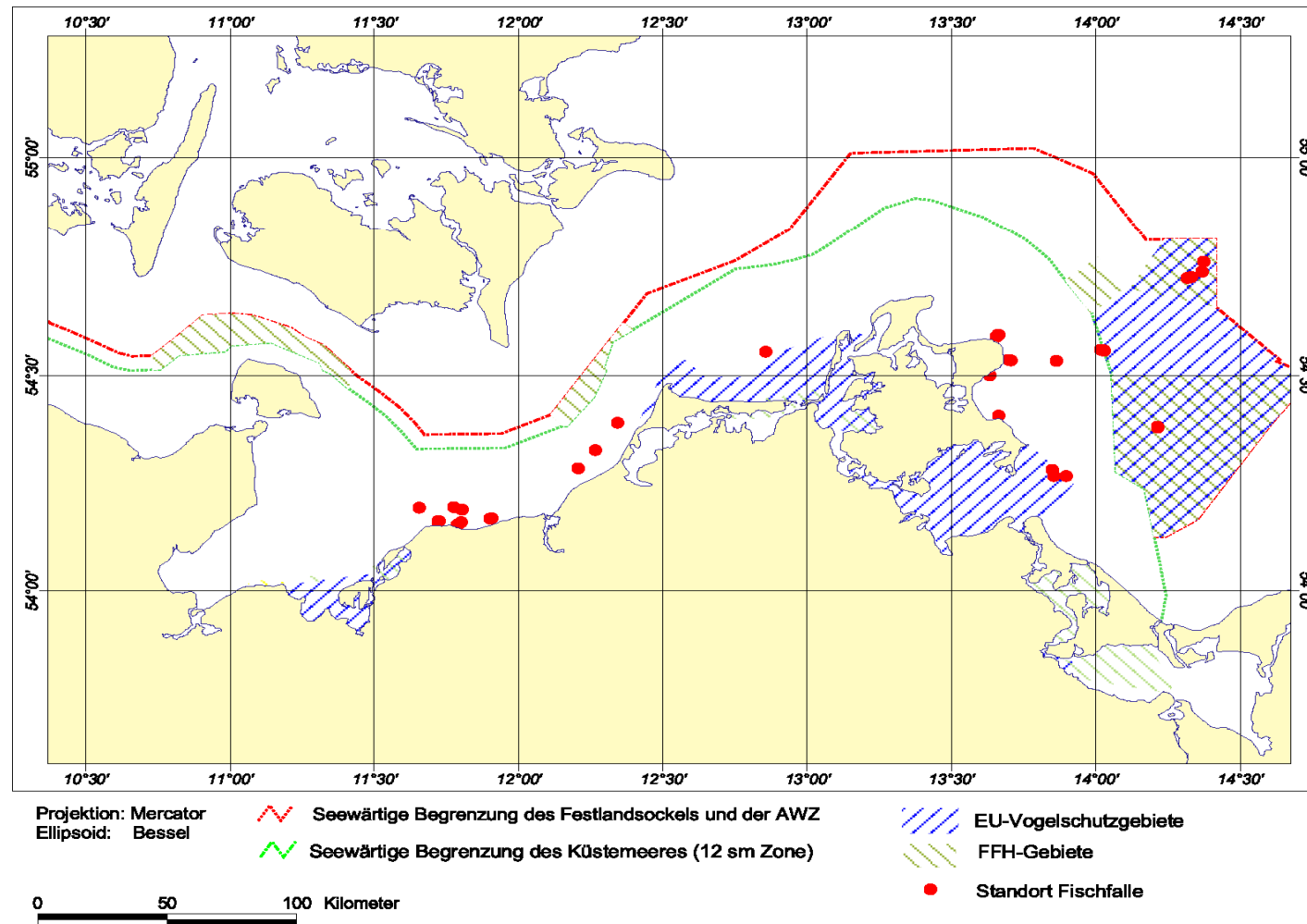
1. Fishing technology: Is the use of fish traps in commercial fisheries feasible and practicable?
2. What is the ecological impact of fish traps compared to gill nets?
 - Selectivity in terms of fish species composition and size composition of target species?
 - Selectivity in terms of non-target species (marine mammals and seabirds)?
 - Impact on the seafloor?
3. What is the fishing efficiency of fish traps compared with gill nets?

Fish traps (cod pots)

- Fish traps (Norwegian type)
- Baited with herring
- Size: L x W x H = 1,50 m x 1,00 m x 1,20 m
- Entrance: 20 x 20 cm
- Comparison with bottom-set gillnets



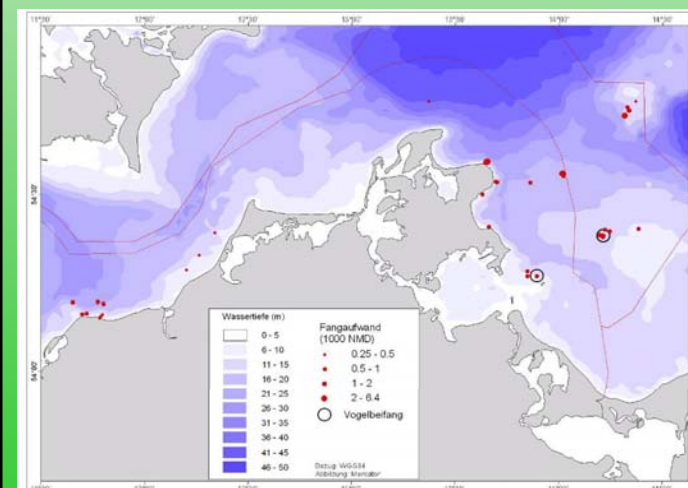
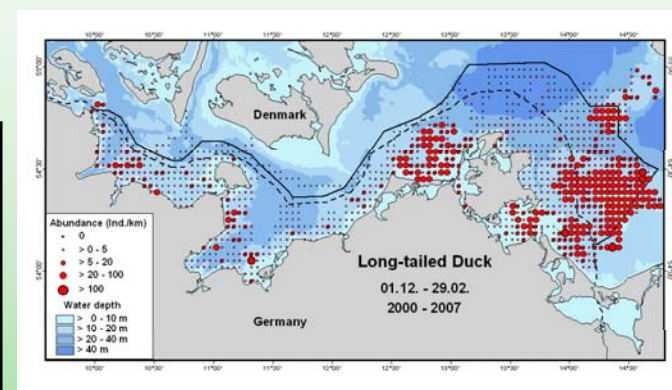
Study area: German coastal and EEZ waters in the Baltic Sea



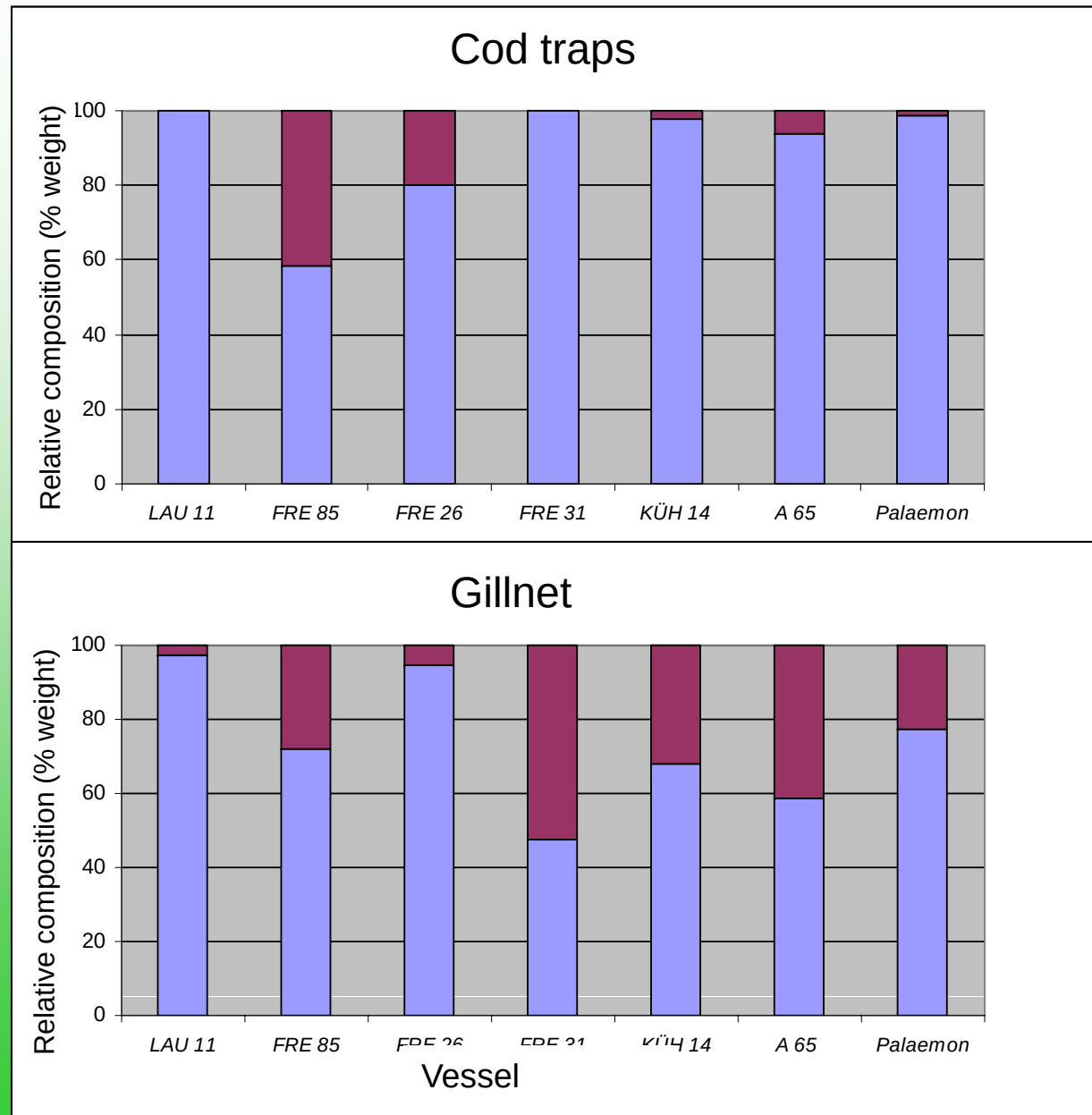
Results-Ecological impact

- No bycatch of seabirds and marine mammals in fish traps
- No bycatch of marine mammals in gill nets (but probability for this is low due to the low abundance)
- Bird bycatch in gillnets:

Month	Effort (1000 net-meter-day)	CPUE (birds/1000 Net-meter-day)
1	0	-
2	0.75	0
3	0.75	0
4	33	0.36
5	1.7	0.59
6	2.65	0
7	0.25	0
8	2.4	0
9	6.8	0.15
10	1.6	0
11	0.25	0
12	1.25	0
Total	51.4	0.27



Species selectivity cod traps vs. gillnets

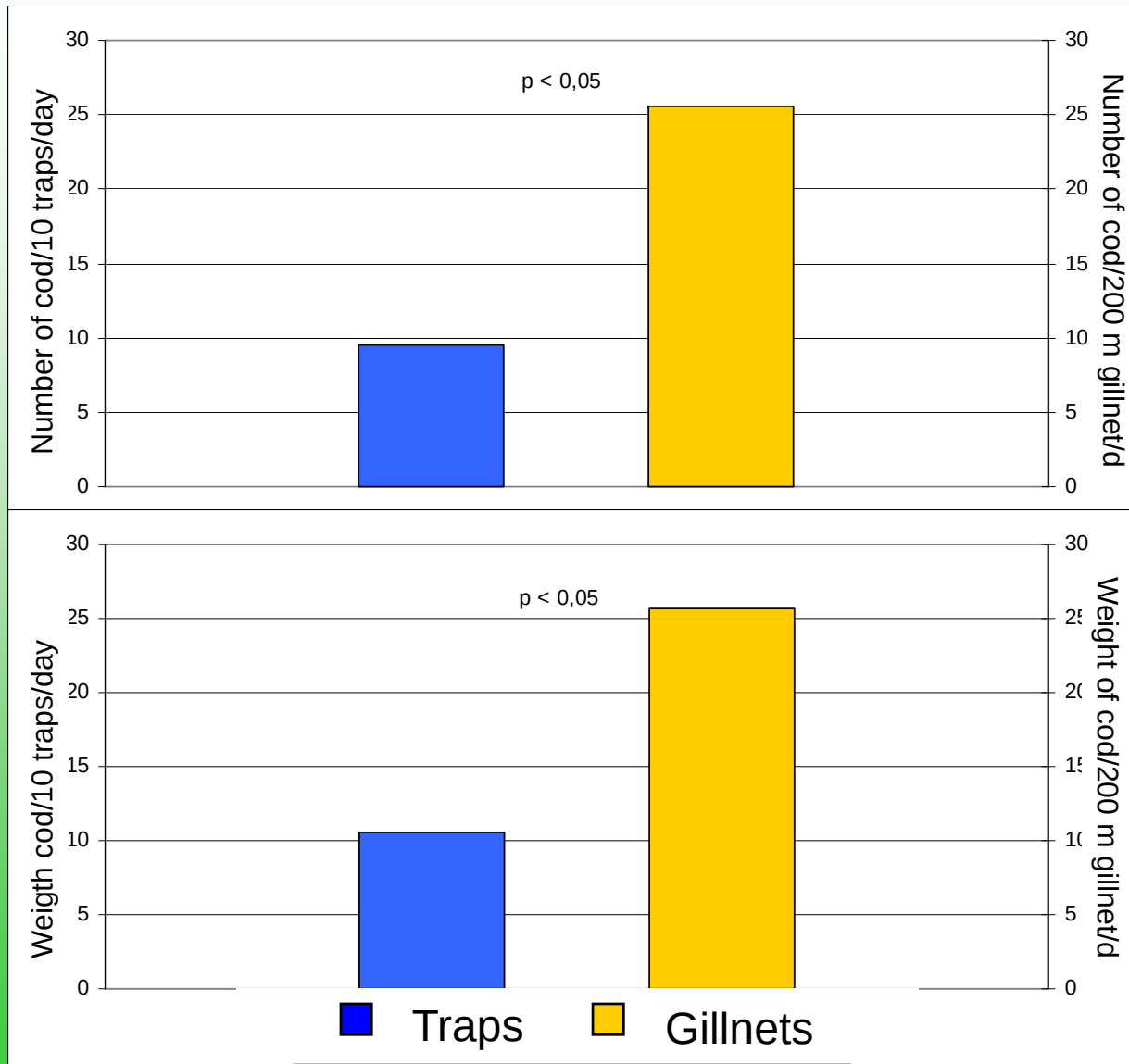


Cod traps 15 fish species; 1.064 kg cod
41 kg of other species (3.9 %)

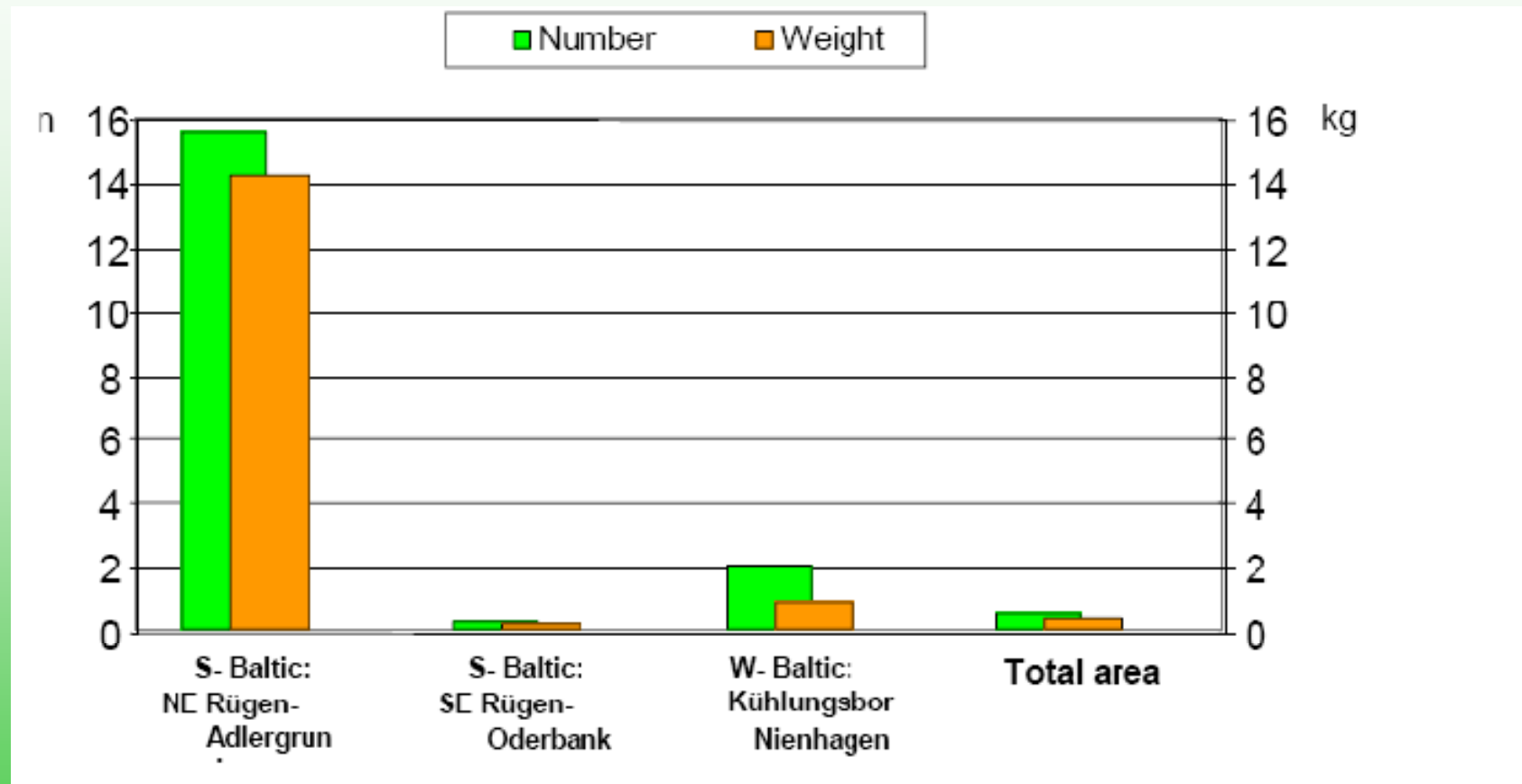
Gillnets 24 fish species
4.880 kg cod. 905 kg other species. (18.5 %)

■ Non target species
■ Target species (Cod)

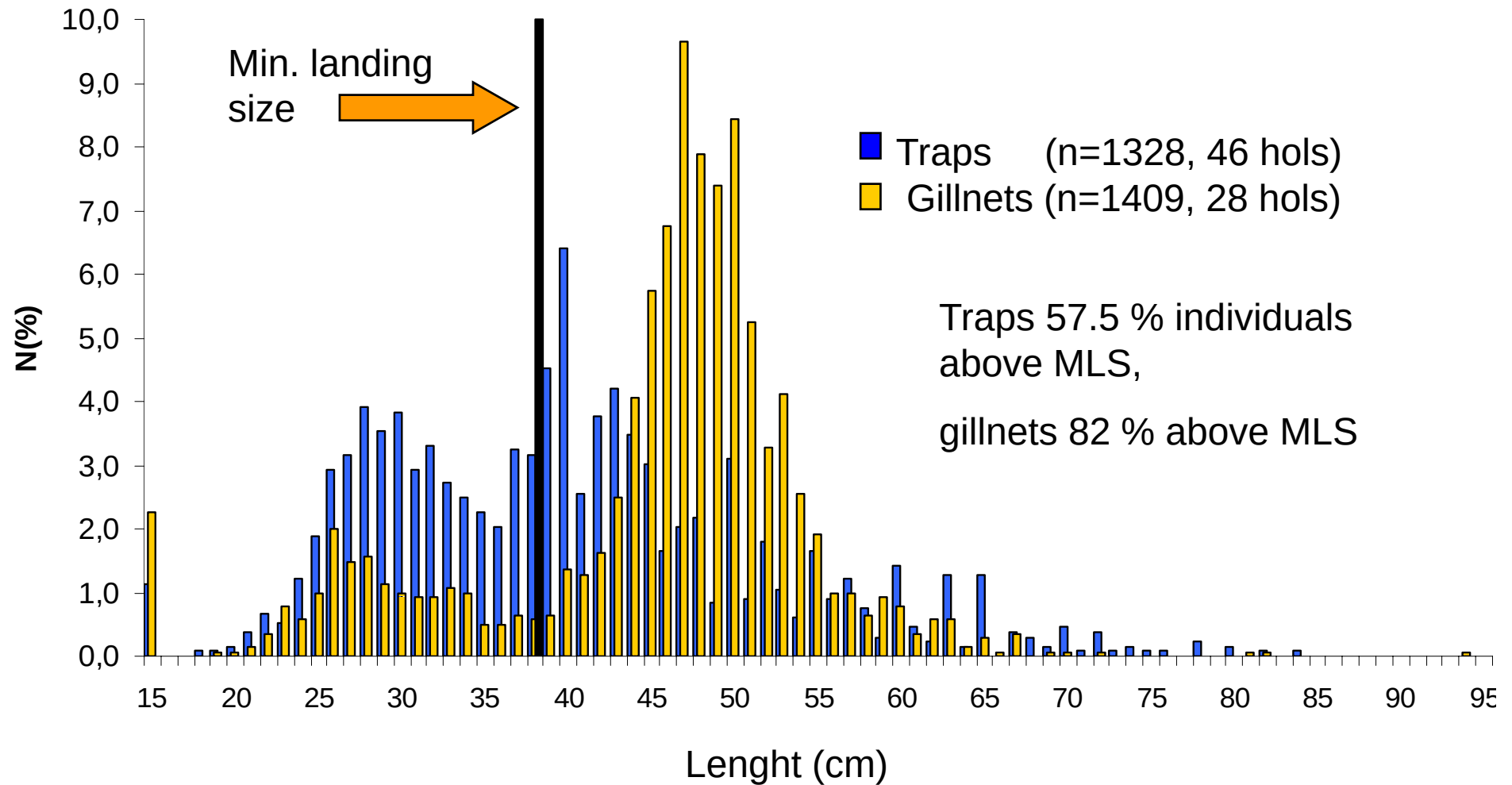
Results: CPUE Cod traps and gillnets



CPUE of fish traps in different study sites

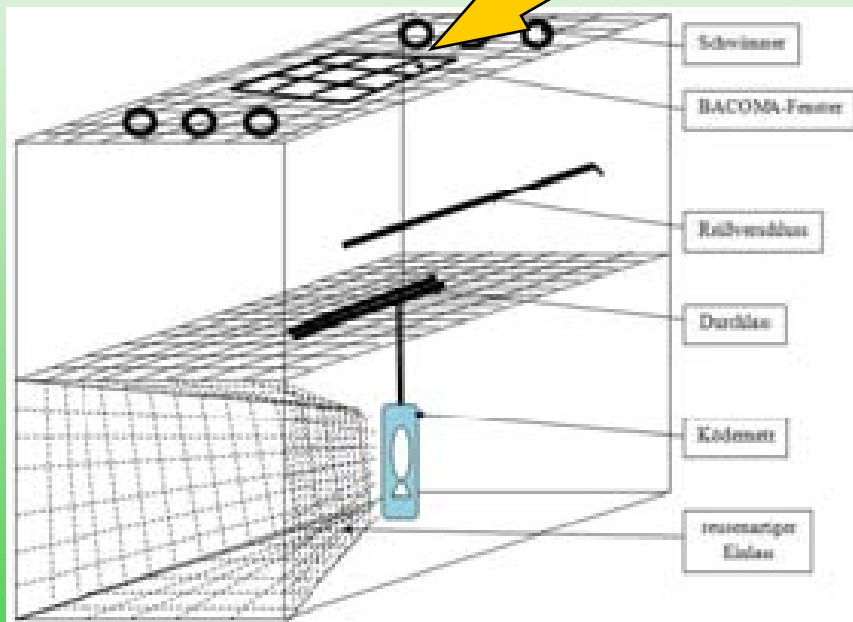


Length frequency distribution of cod



Modification of cod pot to reduce the catch of fish below minimum landing size

Escape panel



Conclusions:

- No bycatch of marine mammals and seabird in fish traps, low impact on the seafloor → ecological sustainable
- Traps have a higher selectivity for target species (cod)
- Lower catch efficiency of cod pots compared to gillnets in past trials
- Improvement of catch efficiency might be possible by technical modifications (e.g. Swedish experience)
- Acceptance in the fisheries sector might be increased by financial incentives (ecolabeling), compensation (e.g. EFF) or exclusion of gillnets in specific areas



Thank you for your attention

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Conservation (BfN), Isle of Vilm

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